WHAT IS CLAIMED IS:

1. A liquid crystal optical element comprising:

a first substrate and a second substrate;

a first liquid crystal layer, which is provided between the first and second substrates;

a first electrode layer and a second electrode layer, which are provided on the first and second substrates, respectively, so as to face each other with the first liquid crystal layer interposed between them; and

a first switching layer and a second switching layer, which are provided between the first electrode layer and the first liquid crystal layer and between the second electrode layer and the first liquid crystal layer, respectively, and each of which includes molecules that change their orientation directions in response to a voltage applied between the first and second electrode layers,

wherein the first liquid crystal layer changes its orientation state as the molecules included in the first and second switching layers change their orientation directions, and

wherein each of the molecules included in one of the first and second switching layers and an associated one of the molecules included in the other switching layer behave as a pair of enantiomers.

2. The liquid crystal optical element of claim 1, wherein the molecules included in each of the first and second switching layers change their orientation directions in a plane that is defined parallel to the surface of the first liquid crystal layer.

3. The liquid crystal optical element of claim 1, wherein when the voltage is applied between the first and second electrode layers, the molecule included in the one switching layer and the molecule included in the other switching layer change their orientation directions into mutually opposite directions.

4. The liquid crystal optical element of claim 1, further comprising a first alignment layer between the first switching layer and the first electrode layer and a second alignment layer between the second switching layer and the second electrode layer, respectively,

wherein each of molecules included in one of the first and second alignment layers and an associated one of molecules included in the other alignment layer exist as a pair of enantiomers.

5. The liquid crystal optical element of claim 1, wherein each of the molecules included in one of the first

and second switching layers and an associated one of the molecules included in the other switching layer exist as a pair of enantiomers.

6. The liquid crystal optical element of claim 1, wherein the first and second switching layers are provided as a second liquid crystal layer and a third liquid crystal layer, respectively, each of the second and third liquid crystal layers including a liquid crystal material.

7. The liquid crystal optical element of claim 6, wherein the liquid crystal material included in the first and second switching layers exhibits a smectic phase.

8. The liquid crystal optical element of claim 6, wherein the liquid crystal material included in the first and second switching layers exhibits at least one of ferroelectricity, antiferroelectricity and ferrielectricity.

9. The liquid crystal optical element of claim 6, wherein the liquid crystal material included in the first and second switching layers is a polymer liquid crystal material.

10. The liquid crystal optical element of claim 6, wherein each of the first and second switching layers includes

a polymer material.

11. The liquid crystal optical element of claim 1, wherein the first liquid crystal layer includes a liquid crystal material exhibiting a nematic phase.

12. The liquid crystal optical element of claim 11, wherein the liquid crystal material included in the first liquid crystal layer exhibits negative dielectric anisotropy.

13. The liquid crystal optical element of claim 11, wherein the liquid crystal material included in the first liquid crystal layer exhibits substantially zero dielectric anisotropy.

14. A liquid crystal optical element comprising:

a first substrate and a second substrate;

a first liquid crystal layer, which is provided between the first and second substrates;

a first electrode layer and a second electrode layer, which are provided on the first and second substrates, respectively, so as to face each other with the first liquid crystal layer interposed between them; and

a first switching layer and a second switching layer, which are provided between the first electrode layer and the first liquid crystal layer and between the second electrode layer and the first liquid crystal layer, respectively, and each of which includes molecules that change their orientation directions in response to a voltage applied between the first and second electrode layers,

wherein the first liquid crystal layer changes its orientation state as the molecules included in the first and second switching layers change their orientation directions, and

wherein when the voltage is applied between the first and second electrode layers, each of the molecules included in one of the first and second switching layers and an associated one of the molecules included in the other switching layer change their orientation directions into mutually opposite directions but to substantially the same degree such that coloring of a light ray, which has been obliquely incident onto the first liquid crystal layer, is compensated for by a portion of the first liquid crystal layer, which is located closer to one of the first and second switching layers, and by another portion of the first liquid crystal layer, which is located closer to the other switching layer, in a reciprocating fashion.

15. The liquid crystal optical element of claim 14, wherein the molecules included in each of the first and second

switching layers change their orientation directions in a plane that is defined parallel to the surface of the first liquid crystal layer.

16. The liquid crystal optical element of claim 14, wherein each of the molecules included in one of the first and second switching layers and an associated one of the molecules included in the other switching layer behave as a pair of enantiomers.

17. The liquid crystal optical element of claim 16, further comprising a first alignment layer between the first switching layer and the first electrode layer and a second alignment layer between the second switching layer and the second electrode layer, respectively,

wherein each of molecules included in one of the first and second alignment layers and an associated one of molecules included in the other alignment layer exist as a pair of enantiomers.

18. The liquid crystal optical element of claim 14, wherein each of the molecules included in one of the first and second switching layers and an associated one of the molecules included in the other switching layer exist as a pair of enantiomers.

19. The liquid crystal optical element of claim 14, wherein the first and second switching layers are provided as a second liquid crystal layer and a third liquid crystal layer, respectively, each of the second and third liquid crystal layers including a liquid crystal material.

20. A method for fabricating a liquid crystal optical element that includes: a first substrate and a second substrate; a liquid crystal layer provided between the first and second substrates; a first electrode layer and a second electrode layer, which are provided on the first and second substrates, respectively, so as to face each other with the liquid crystal layer interposed between them; and a first switching layer and a second switching layer, which are provided between the first electrode layer and the liquid crystal layer and between the second electrode layer and the liquid crystal layer, respectively, and each of which includes molecules that change their orientation directions in response to a voltage applied between the first and second electrode layers, the liquid crystal layer changing its orientation state as the molecules included in the first and second switching layers change their orientation directions,

the method comprising the steps of:

preparing a mixture that includes a liquid crystal material;

preparing the first and second substrates on which the first and second electrode layers have been formed, respectively;

bonding the first and second substrates together with a predetermined gap provided between them;

injecting the mixture into the gap between the bonded substrates; and

defining the first and second switching layers on the first and second electrode layers and the liquid crystal layer between the first and second switching layers, respectively, by causing a phase separation in the mixture injected.

21. The method of claim 20, further comprising, before the step of bonding the first and second substrates together, the steps of:

preparing a first alignment layer material and a second alignment layer material as a pair of enantiomers;

making the first alignment layer of the first alignment layer material on the first electrode layer; and

making the second alignment layer of the second alignment layer material on the second electrode layer.

22. The method of claim 20, wherein the step of

preparing the mixture includes the step of preparing a polymerizable material, and

wherein the step of defining the first and second switching layers and the liquid crystal layer includes the step of selectively polymerizing the polymerizable material on the first and second electrode layers.

23. The method of claim 22, wherein the step of selectively polymerizing the polymerizable material includes the step of exposing the mixture to light.

24. The method of claim 22, wherein the step of selectively polymerizing the polymerizable material includes the step of heating the mixture.

25. The method of claim 20, wherein the step of preparing the mixture includes the step of preparing a mixture that includes a nematic liquid crystal material and a smectic liquid crystal material, and

wherein the step of defining the first and second switching layers and the liquid crystal layer includes the step of defining the liquid crystal layer including the nematic liquid crystal material and the first and second switching layers including the smectic liquid crystal material.